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Indian Standard

SPECIFICATION FOR VARNISHED FABRICS FOR ELECTRICAL PURPOSES

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

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SPECIFICATION FOR VARNISHED FABRICS FOR ELECTRICAL PURPOSES

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

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AMENDMENT NO. 1 NOVEMBER 1990
TO
IS 11297 (Part 1):1985 SPECIFICATION FOR VARNISHED FABRICS FOR ELECTRICAL PURPOSES

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

(*Page* 3, *clause* 0.4, *line* 1) - Substitute 'silk' *for* 'natural silk'.

(ETDC 63)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR VARNISHED FABRICS FOR ELECTRICAL PURPOSES

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

0. FOREWORD

0.1 This Indian Standard (Part 1) was adopted by the Indian Standards Institution on 16 July 1985, after the draft finalized by the Solid Electrical Insulating Materials Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 It is intended to bring out a series of Indian Standards on varnished fabrics for electrical purposes. This standard will have the following parts:

a) Definitions and general requirements,
b) Methods of test, and
c) Specifications for individual materials.

0.3 Varnished cotton cloth and tape for electrical purposes are, at present, covered in IS : 3352-1965*. With the publication of relevant specifications for these tapes in the above series, this standard will be withdrawn.

0.4 Varnished fabrics comprising woven from cotton, natural silk or synthetic fibre (including glass) supplied in the form of full width rolls, sheets or tapes slit to various widths are covered in this standard. In selecting the varnished fabric most suitable for a particular purpose, the following factors should be considered:

a) Operating temperature range,
b) Electrical requirement, and
c) Tensile strength.

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*Specification for varnished cotton cloth and tape for electrical purposes.

0.5 In preparing this standard, assistance has been derived from the following standards:

IEC Pub 394-1 (1972) Varnished fabrics for electrical purposes: Part I Definitions and general requirements. International Electrotechnical Commission.

BS 419 : 1958 Varnished cotton cloth sheet and tape for electrical purposes. British Standards Institution.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 1) specifies definitions related to and the general requirements to be fulfilled by varnished fabrics for electrical purposes.

2. DEFINITIONS

2.0 For the purpose of this standard, the definitions given in IS : 2244-1972†|, in addition to the following, shall apply.

2.1 Bias — Material having threads at angles other than 90° to the edges.

2.2 Bias-Cut — Material cut so that both warp and weft threads make an angle with the edges other than 0 or 90°.

2.3 Full Width Material — Material of production width, for example, about 1 m as ordered with or without selvages.

2.4 Panel Form Bias-Cut —Bias-cut material in short lengths not joined together.

2.5 Seel — Material in roll form when the width is less than 100 mm.

2.6 Roll — Material in roll form when the width is greater than 100 mm.

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*Rules for rounding off numerical values (*revised*).

†Glossary of terms relating to treated fabrics (*first revision*).

2.7 Seamless Bias-Cut — Bias-cut material produced in a continuous length by helical cutting-from a woven sleeve and then varnished.

2.8 Sewn Bias-Cut — Bias-cut material in short lengths sewn together before or after varnishing to form a continuous length.

2.9 Sheet — Material of width exceeding 100 mm, varnished on both sides. Sheet may be either straight or bias.

2.10 Straight — Material having one set of threads parallel to the edges and the other set at right angles.

2.11 Straight-Cut — Material cut parallel to warp direction.

2.12 Slit Material — Material without selvages cut from full width material.

2.13 Struck Bias-Cut — Bias-cut material in short lengths struck together with an adhesive after varnishing, to form a continuous length.

2.14 Tape — Material cut to a width not exceeding 100 mm. It may be either straight cut or bias-cut and has no selvages.

3. DESIGNATION

3.1 The varnished fabrics shall be described in words which identify first the type of varnish and second the base fabric. The more commonly used materials are listed below:

a) Types of varnish:

OR	Oleoresinous
PF	Phenolic
AK	Alkyd
PUR	Polyurethane
EP	Epoxide
BT	Bitumen
Si	Silicone

b) Types of base material:

C	Cotton
R	Viscose rayon
S	Silk
PETP	Polyethylene terephthalate
G	Glass
PA	Polyamide

The associated code letters may be used to abbreviate the description when necessary. Further materials and symbols will be added if the need for them becomes apparent.

NOTE — Consideration is being given to methods of test for thermal endurance and an addition to the designation indicating this, will be added later.

3.2 Finish — The type of surface finish shall be as agreed to between the purchaser and the supplier, for example, dry, greasy, tacky, etc, and also the colour.

4. GENERAL REQUIREMENTS

4.1 All material in any consignment shall be as consistent as possible and have properties within the limits of this specification throughout the whole length of each roll. The varnished fabric shall be flexible, the surface shall be uniform, reasonably smooth and reasonably free from defects, such as bubbles, air holes, creases and flaws. It shall be capable of being unrolled without damage. The varnish shall not peel, flake or become brittle during storage at normal temperature.

4.2 Joins (Splices) in Bias-Cut Materials

4.2.1 *Sewn or Stuck Bias-Cut Materials* — The length of the material between any two successive joins shall be not less than 1·2 m.

The joins shall be unmarked and their tensile strength shall be not less than the minimum values given in Part 3 of this specification for the tensile strength of the material, unless otherwise agreed to between the purchaser and the supplier.

Adhesive or adhesive tape used to stick joins and the method of making a join shall be the subject of agreement between the purchaser and the supplier.

4.2.2 *Panel Form Bias-Cut Materials* — The recommended roll lengths, shall be made up of pieces not less than 1·2 m in length. Individual pieces may be made up into rolls of appropriate total length by interleaving with a continuous length of a suitable material.

4.3 Dimensions

4.3.1 *Thickness* — The nominal thickness of the varnished fabric shall be one of the following:

0·06 mm, 0·08 mm, 0·10 mm, 0·12 mm, 0·15 mm, 0·20 mm,
0·25 mm, 0·30 mm, 0·40 mm, 0·50 mm or 0·60 mm

The central value (median value) of the measured thickness shall be within ±10 percent of the nominal value or ± 0·01 mm of the nominal thickness whichever is the greater.

The measurements shall be carried out in accordance with the method specified in Part 2 of this standard.

4.3.2 *Width*

4.3.2.1 *Cloth* — The tolerance on cloth of upto- and including 100 cm in width shall be ±2·5 percent and the tolerance on cloths of widths over 100 cm shall be as agreed to between the purchaser and the supplier.

4.3.2.2 *Tape* — The tolerance on width of straight cut or bias-cut tape of nominal up to and including 100 mm shall be ±0·5 mm and tolerances on width over 100 mm shall be ±1 percent.

4.3.3 *Length* — The nominal length of the rolled cloth tape shall be 50 m, 100 m or any other length as agreed to between the purchaser and the supplier. When measured the length shall not be less than the nominal length.

With the exception of panel form bias-cut material any one roll of material may contain not more than two individual piece lengths neither of which shall be shorter than 10 m. If the electrical or mechanical property or both of the material are not maintained in the join between the two pieces the join shall be marked. The marking shall be visible without unrolling the material.

5. PACKING

5.1 Varnished Cloth — It shall be rolled on a hollow core of suitable material approximately of 30 mm internal diameter and shall be sufficiently strong to support the cloth without collapsing. The width of the hollow core shall be not less than the full width of varnished cloth. Moisture proof paper shall be wrapped around the roll and folded over the ends of the roll. The ends of the roll shall be dipped in paraffin wax.

5.2 Varnished Sheet — Sheet shall be supplied in the form of stacks packed in a moisture-proof paper.

5.3 Varnished Tape — It shall be wound on a hollow core of suitable material approximately of the same length as the tape width; the core shall have an inside diameter of approximately 40 mm and be sufficiently strong to support the tape without collapsing. Roll may be dipped m paraffin wax, if necessary. The tape roll shall be wrapped suitably.

5.4 If required by the purchaser the material shall be packed in strong wooden cases and waterproof material shall be placed around inside the wooden cases.

6. MARKING

6.1 All packages shall be marked with the following information:

a) Name and designation of the material;
b) Type of finish;
c) Length, width and thickness of material;
d) No. of sheets in a stack in case of sheets;
e) Manufacturer's name or trade-mark, if any; and
f) Date of manufacture.

6.1.1 The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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